

Laparoscopic Management of Rudimentary Uterine Horn Pregnancy: Case Report and Literature Review

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ABSTRACT

Background: Pregnancy in the rudimentary uterine horn is an extremely rare clinical condition. Treatment includes surgical removal of the rudimentary horn.

Methods: A rudimentary horn pregnancy was reported that occurred after intrauterine insemination. Similar cases treated with laparoscopic surgery reported in the peer-reviewed journals were reviewed as well.

Results: Pregnancy in the right rudimentary horn of 6-weeks gestational age was successfully treated with laparoscopic surgery.

Conclusion: Laparoscopy is a feasible and safe method for treating rudimentary horn pregnancy.

Key Words: Laparoscopy, Pregnancy, Rudimentary horn.

INTRODUCTION

Unicornuate uterus with a rudimentary horn results from arrested development of one of the Mullerian ducts. Pregnancy in a noncommunicating rudimentary horn is an extremely infrequent event that results from transperitoneal migration of a sperm or a fertilized ovum. The reported incidence of rudimentary uterine horn pregnancy ranges from 1:76,000 to 1:140,000.^{1,2}

When a rudimentary horn pregnancy is diagnosed, excision of the pregnant horn is of crucial importance because 80% to 90% of these pregnancies eventually culminate in rupture, typically between the 10th and 20th weeks of gestation.^{2,3} Less than 10% of the pregnancies occurring in the rudimentary horn reach term with a fetal salvage rate between 0% and 13%.²

In this report, we present a rudimentary horn pregnancy that occurred after intrauterine insemination (IUI) and was successfully treated with laparoscopic surgery, and we review similar cases reported in the literature.

CASE REPORT

A 28-year-old nulligravida, who was suffering from infertility for 3 years, presented to our clinic for an infertility evaluation. Luteal phase progesterone concentration was 16ng/dL, and other hormone parameters and sperm analysis were all in the normal ranges. Hysterosalpingography showed a left unicornuate uterus with only one ipsilateral patent tube (**Figure 1**). Sonographic evaluation confirmed a left unicornuate uterus with normal appearing ovaries. Intravenous pyelography did not reveal any urinary system anomaly. Ovulation induction with clomiphene citrate was scheduled and a dominant follicle developed on the left side. After priming with 10,000hCG, an IUI was performed and a pregnancy was confirmed when β hCG was 197mIU/mL 14 days after IUI. Despite regular increases in β hCG, no intrauterine gestational sac was demonstrated on transvaginal sonography until 6 weeks after the last menstrual period, during which a viable embryo of 6 weeks and 1 day was depicted in the right rudimentary horn (**Figure 2**).

Because of the poor outcome of rudimentary horn preg-

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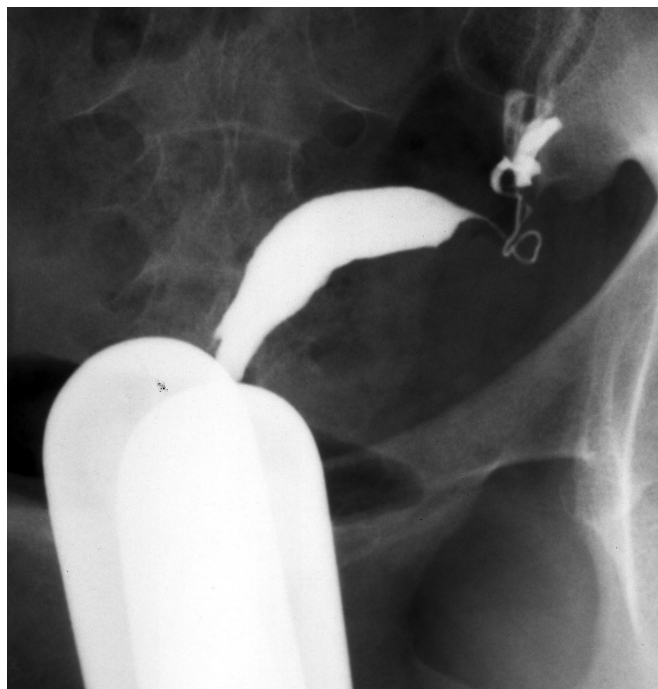


Figure 1. Hysterosalpingography showing a left unicornuate uterus with an ipsilateral patent left tube.



Figure 2. A viable embryo of 6 weeks 1 day is seen in the right rudimentary uterine horn surrounded by a thick myometrial wall.

nancies, which usually result in rupture, the patient was informed about the outcome and after giving informed consent operative laparoscopy was decided upon. A laparoscopy was performed using one 10-mm umbilical, one 10-mm suprapubic, and two 5-mm ports in the right and left quadrants. On initial pelvic evaluation, a right non-

communicating rudimentary horn connected with a fibrous band to the unicornuate uterus was observed (**Figure 3**). Both ovaries and fallopian tubes appeared normal. Before beginning surgery, a right ureter was identified on the pelvic wall, but was not dissected because no urinary anomaly was depicted on preoperative evaluation. The fibrous band that attaches the rudimentary horn to the unicornuate uterus was coagulated by bipolar forceps and transected using monopolar scissors. Subsequently, the rudimentary horn was removed through the suprapubic port with an endobag. The total time of surgery was 50 minutes. The intraoperative and postoperative period was uneventful, and the patient was discharged healthy on postoperative day 1. The pathology report revealed ectopic pregnancy in the rudimentary uterine horn.

DISCUSSION

Pregnancy in the rudimentary horn is associated with significant obstetric complications and maternal mortality. The diagnosis is somewhat difficult, and it is not infrequent to simply overlook such an anomaly during routine gynecological evaluation, especially when a communicating horn without any symptoms is present. It might be misdiagnosed as an ectopic, cornual, or isthmic pregnancy (**Table 1**). As in our case, some patients might be diagnosed during infertility evaluation, or if there is a noncommunicating cavitated uterine horn, the presence of functioning endometrium may cause cryptomenorrhea that results in formation of hematometra with intractable lower abdominal pain.⁴

Because of the weak musculature of a rudimentary horn, it

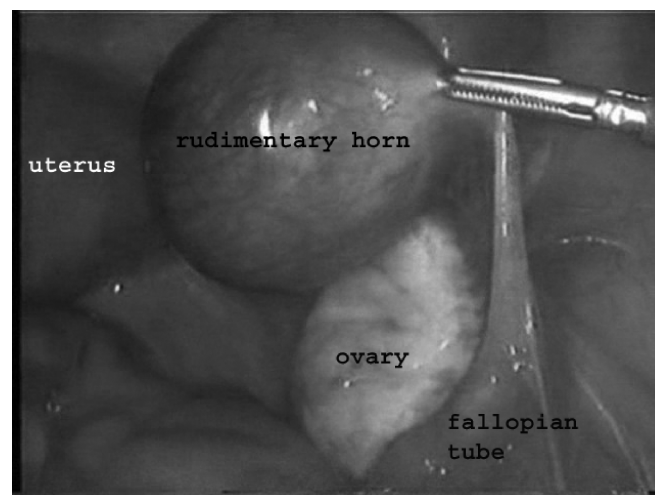


Figure 3. Right rudimentary horn is attached to the uterus with a thin fibrous band. The right fallopian tube appears normal.

Table 1.

Author	Age	Gestational Age	IVP	Preoperative Diagnosis*	Type of RH*	Connection between RH* and uterus	Rupture	Treatment*	Side of RH*
Dulemba et al ⁷ (1996)	26	13 weeks	Normal	Right isthmic pregnancy	NC	Not reported	No	LS-RHE	Right
Dicker et al ⁶ (1998)	31	8 weeks	Not reported	Cornual pregnancy	NC	Fibrous	No	LS-RHE	Right
Yahata et al ⁸ (1998)	22	7 weeks	Normal	RH pregnancy	NC	Fibrous	No	LS-RHE	Right
Edelman et al ³ (2003)	23	7 weeks	Duplicated ureter	RH pregnancy	NC	Not reported	No	MTX/LS-RHE	Right
Chakravarti et al ¹ (2003)	23	9 weeks	Not reported	Ectopic pregnancy	Not reported	Not reported	No	LS-RHE	Left
Cutner et al ⁵ (2004)									
Case 1	32	Not reported	Normal	RH pregnancy	NC	Fibrous	No	Intracardiac KCl + MTX/LS-RHE	Right
Case 2	32	12 weeks	Not reported	RH pregnancy	NC	Not reported	No	Intracardiac KCl + MTX/LS-RHE	Right
Present case (2005)	28	6 weeks	Normal	RH pregnancy	NC	Fibrous	No	LS-RHE	Right

* NC = noncommunicating; RH = rudimentary horn; LS-RHE = laparoscopic rudimentary horn excision

tends to rupture between the 10th and the 20th gestational weeks.^{2,3} Thus, if pregnancy in the rudimentary horn is diagnosed, excision of the pregnant horn is of crucial importance, which can be performed either by laparotomy or laparoscopy. Systemic methotrexate administration or feticide with intracardiac potassium chloride were also used as alternatives or adjuncts to surgery in early gestation; however, a small number of reported cases precludes making a direct comparison of the feasibility and effectiveness of medical treatment with that of surgical resection.^{3,5} Nevertheless, when a rudimentary horn is diagnosed, the suggested treatment is excision of the rudimentary horn to prevent associated complications.^{4,5}

The high incidence of urinary tract anomalies associated with unicornuate uteri mandates investigation for possible urinary system anomalies preoperatively to avoid ureteral injury during surgery. One important point to keep in mind is that the excision of the ipsilateral fallopian tube is recommended to prevent a further ectopic tubal gestation.⁶ The laparoscopic approach has been gaining popularity in recent years, which is suggested as a safe procedure. We summarized the reported cases of rudimentary horn pregnancy treated laparoscopically to date in **Table 1**. All of the cases were diagnosed during early gestation, none were ruptured

at the time of diagnosis, and with the exception of one reported case all were found on the right side, which is in correlation with other reported series. All reported cases had noncommunicating rudimentary horns, except for one that did not indicate its type. The gestational age at diagnosis ranged between 6 weeks and 13 weeks. Strikingly, the preoperative diagnosis was ectopic, cornual, or isthmic pregnancy in 3 of 8 reported cases.

The connection between the horn and unicornuate uterus may be fibrous or fibromuscular. If a thick fibromuscular tissue connecting the horn and uterus is present, laparoscopic removal is technically more challenging, requires a longer operation time, and closing the myometrium with laparoscopic stitches is recommended to avoid a further uterine rupture. However, in our case only a thin fibrous band was present, and therefore we did not need to close the myometrium.

CONCLUSION

We recommend that laparoscopic removal of a rudimentary horn pregnancy is a safe procedure for an early unruptured gestation; however, a comprehensive preoperative workup including investigation for possible pres-

ence of urinary tract anomalies is of crucial importance to avoid associated complications.

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